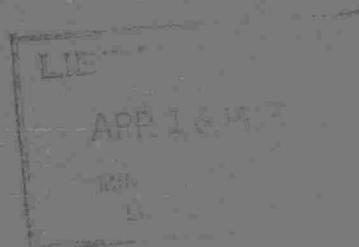


1
9
7
3

OPERATING SUMMARY



STRATFORD
WATER POLLUTION CONTROL PLANT

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca



MINISTRY OF THE ENVIRONMENT

MINISTER

Honourable William G. Newman

DEPUTY MINISTER

E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS

J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

STRATFORD

WATER POLLUTION CONTROL PLANT

operated for

THE CITY OF STRATFORD

by the

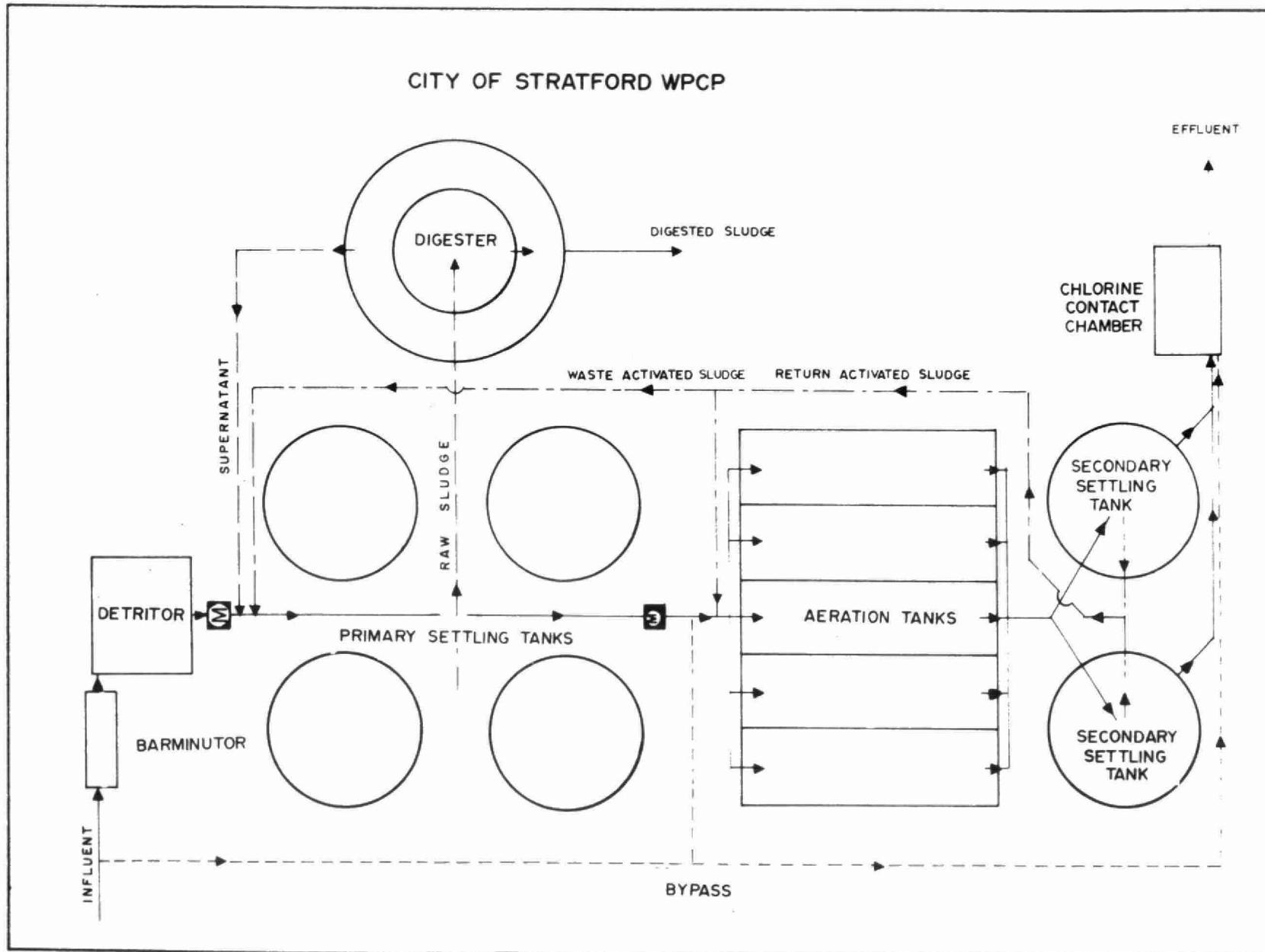
MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

CONTENTS

Title Page	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Flow Diagram	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Design Data	.	.	.	.	.	.	.	.	.	.	.	.	.	5
Operating Cost	.	.	.	.	.	.	.	.	.	.	.	.	.	6
Process Data	.	.	.	.	.	.	.	.	.	.	.	.	.	8



DESIGN DATA

PROJECT City of Stratford WPCP
PROJECT NO. 2-0002-57
TREATMENT Activated Sludge
DESIGN FLOW 6.0 mgd
DESIGN POPULATION 30,000
BOD - Raw Sewage 140 mg/l
- Removal 90%
SS - Raw Sewage 250 mg/l
- Removal 95%

PRIMARY TREATMENT

Comminution

Type: Barminutor
Size: One Model C (36')

Grit Removal

Type: Dorr detritor
Size: One 20' x 20' x 1' (2500 gal)
Retention: 0.9 min

Primary Sedimentation

Type: Infilco
Size: Four 80' dia x 10 $\frac{1}{2}$ ' swd (1.32 mil gal)
NOTE: Two used for storm flows only
Retention: 2.7 hr (2 cl)
Loading: Surface, 600 gal/ft²/day
Weir, 12,000 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Diffused air; triple-pass
Size: Five 85 $\frac{1}{2}$ ' x 25' 8" (avg) x 13' (0.97 mil gal)
Retention: 3.9 hr

Diffusers

Type: Activated Sludge Ltd.
Alundum Domes

Air Supply

Type: Roots-Connersville
Size: Three 1750 cfm

Secondary Sedimentation

Type: Infilco
Size: Two 80' dia x 11' 3" swd (0.705 mil gal)
Retention: 2.7 hr
Loading: Surface, 600 gal/ft²/day
Weir, 12,000 gal/ft/day

CHLORINATION

Chlorine Contact Chamber

Size: 67' x 27' x 8' (90,000 gal)
Retention: 22 min

Chlorinator

One F & P 500 lb/day

OUTFALL

Avon River

SLUDGE HANDLING

Digestion System - Heated, two-stage

Type: Gas mixed
Size: One 73' dia x 26' swd (100,00 cu ft or 0.624 mil gal)

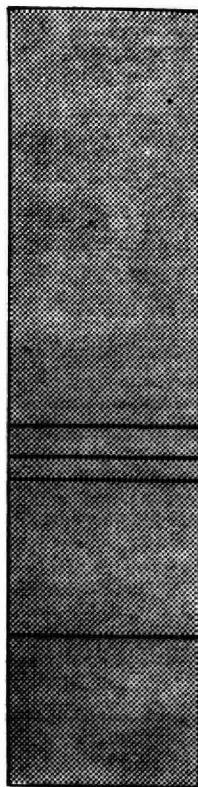
Primary Stage (inner)

Size: 67,600 cu ft
Loading: 2.8 lb/cu ft/mo

Secondary Stage (outer ring)

Size: 32,400 cu ft
Total Loading: 1.9 lb/cu ft/mo

ANNUAL COSTS



1973 OPERATING COSTS

● SALARIES & WAGES	54 %
● EMPLOYEE BENEFITS	3 %
● TRANSPORTATION & COMMUNICATIONS	2 %
● SERVICES	21 %
● SUPPLIES & EQUIPMENT	19 %
● AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	NIL
● TRANSFER PAYMENTS	NIL
● OTHER TRANSACTIONS	NIL

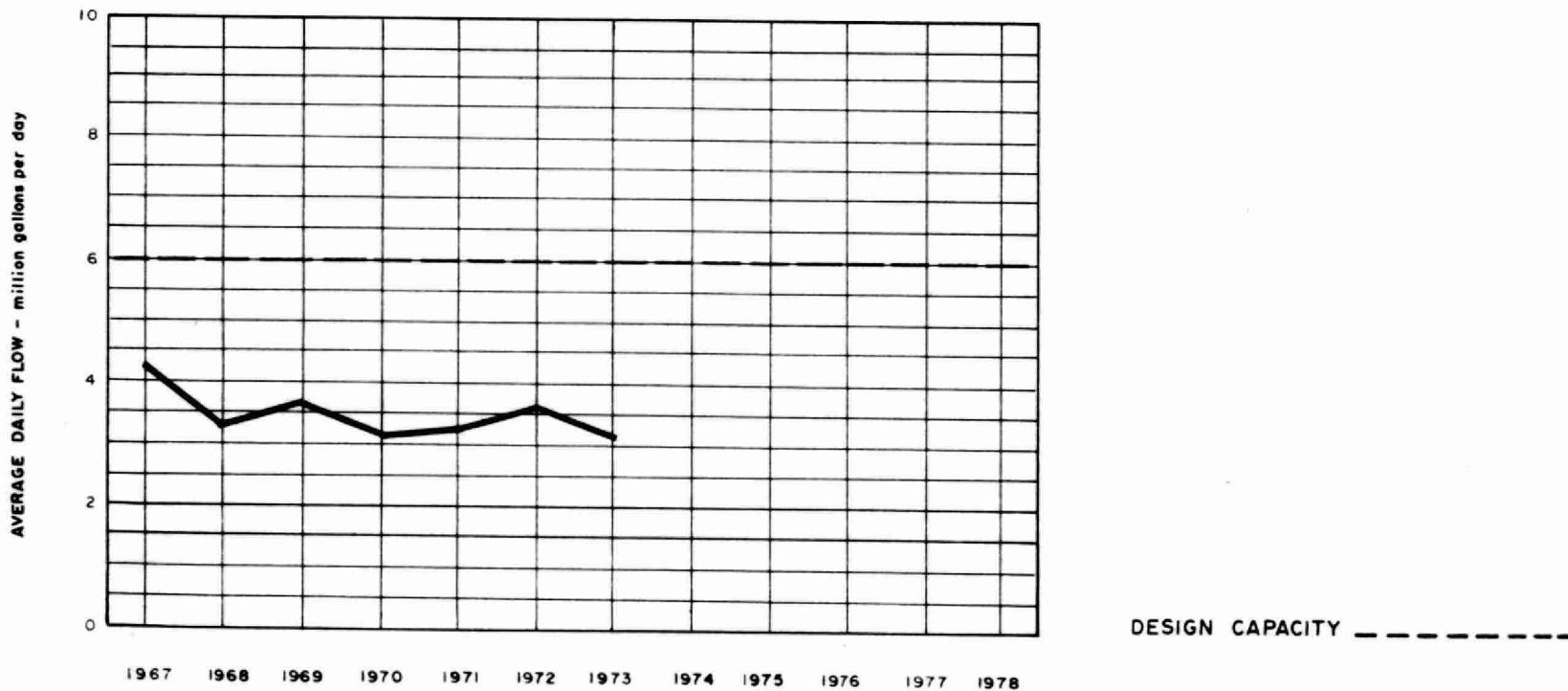
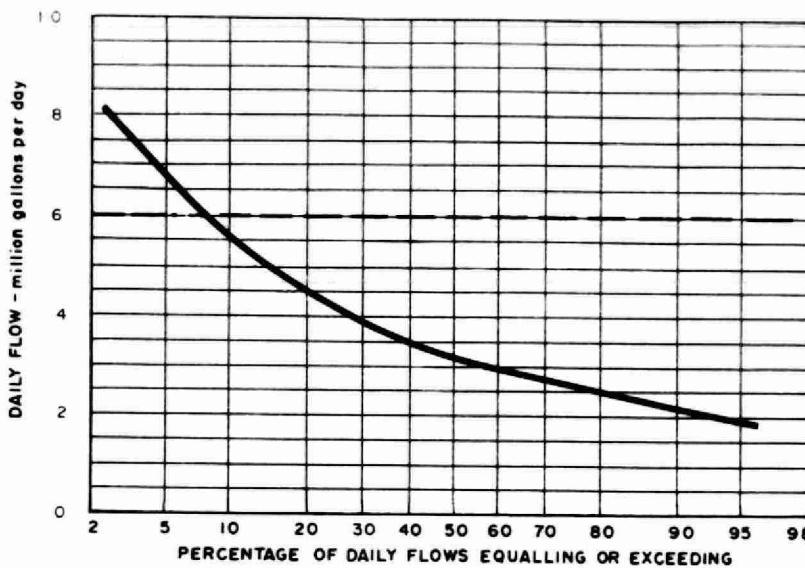
YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G.	t/lb BOD
1968	1232	\$ 69,371	56	2
1969	1322	75,996	57	6
1970	1178	80,123	68	4
1971	1168	86,609	73	9
1972	1314	88,838	68	7
1973	1305	108,329	83	4

OPERATING EXPENDITURES

SALARIES AND WAGES	\$59,015
EMPLOYEE BENEFITS	3,473
TRANSPORTATION & COMMUNICATIONS	2,371
SERVICES	22,905
SUPPLIES AND EQUIPMENT	20,565
ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0
TRANSFER PAYMENTS	0
OTHER TRANSACTIONS	0
TOTAL	\$108,329

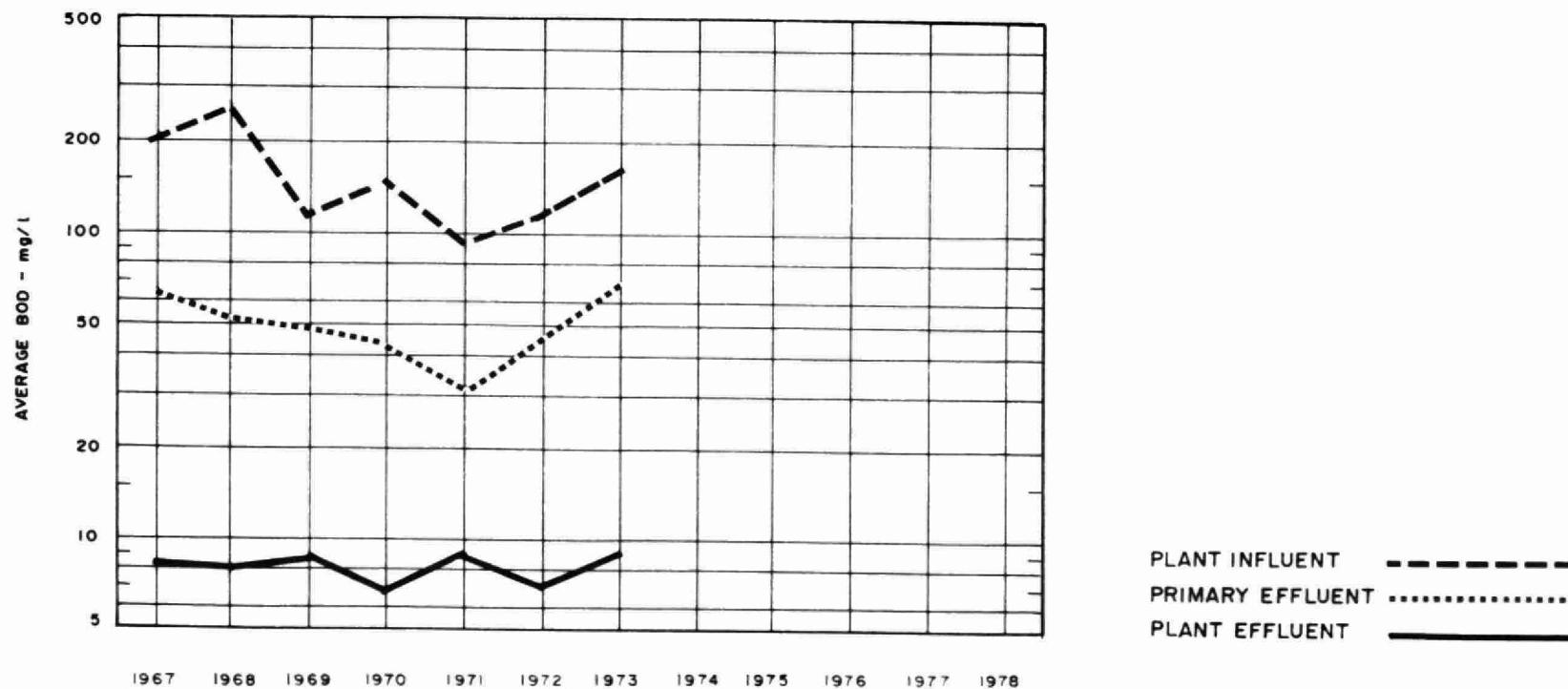
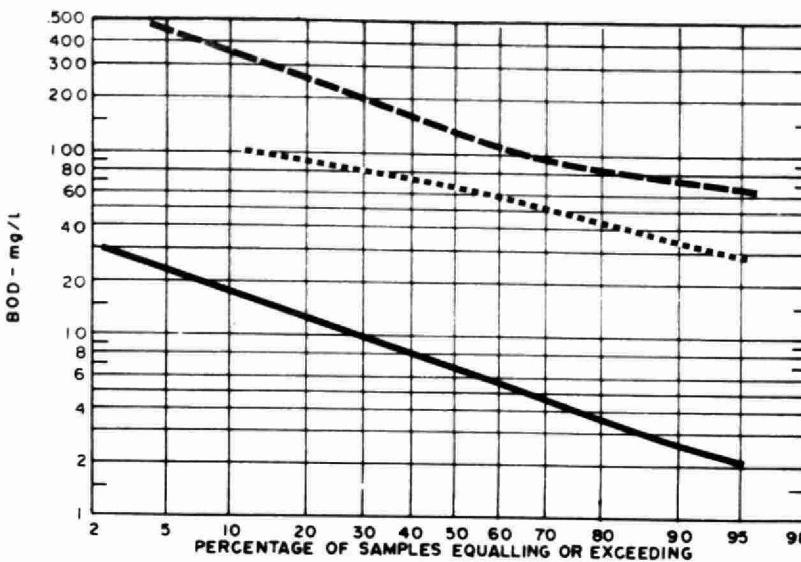
PROCESS DATA FLOWS



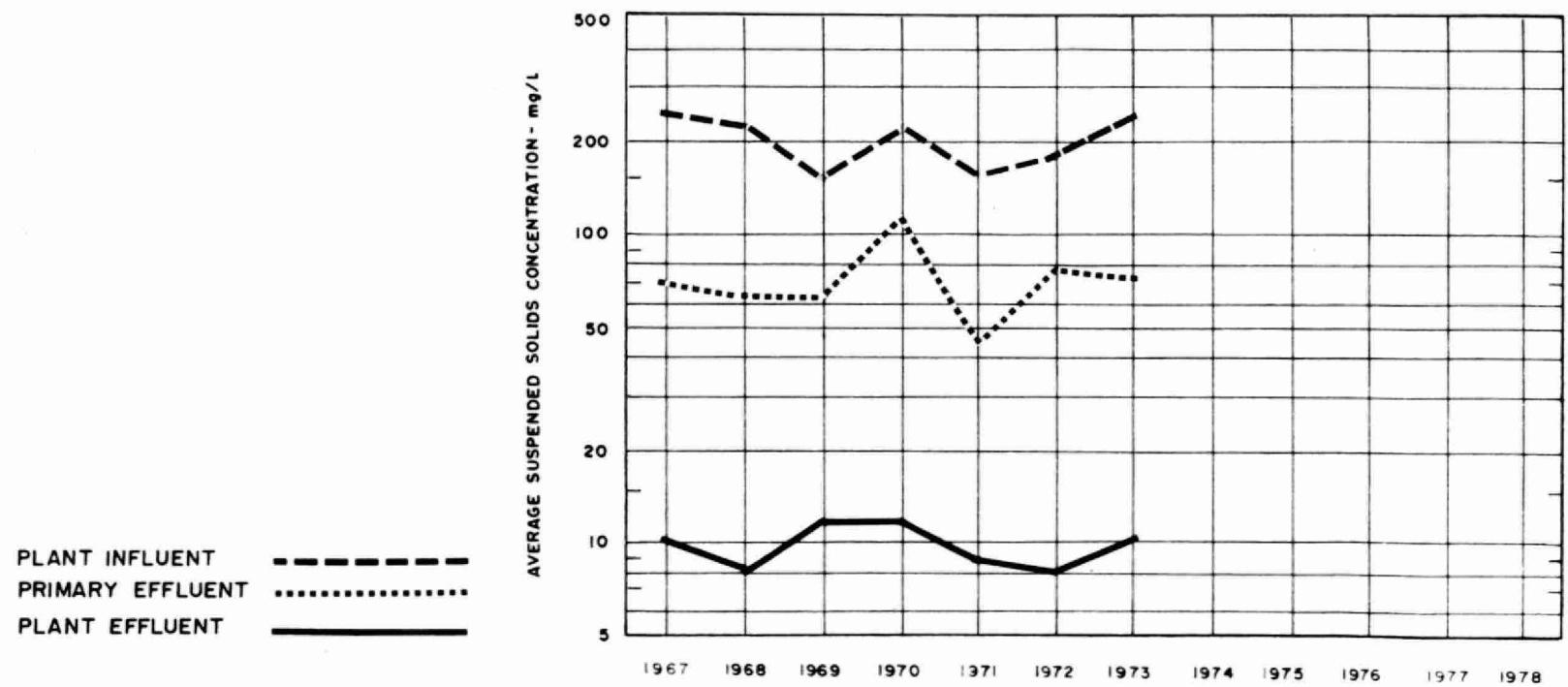
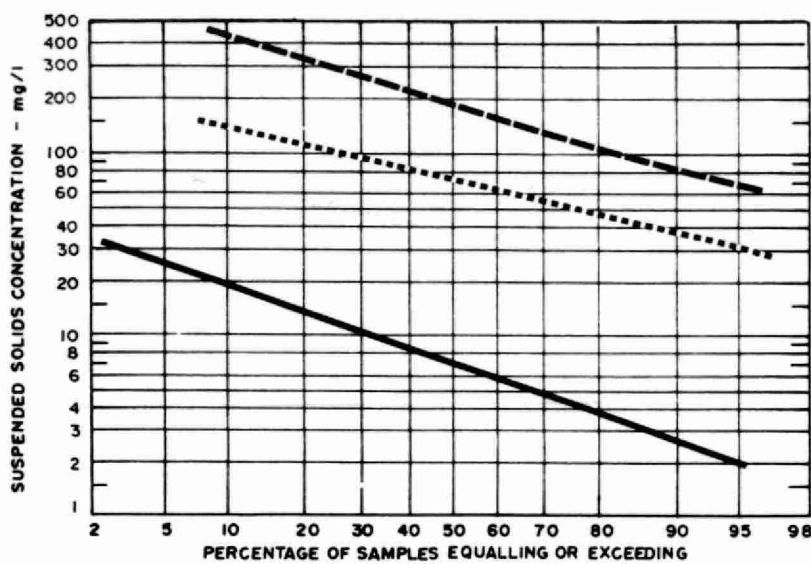
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	10^3 pounds			%	10^3 pounds		
JAN	130.5	4.21	8.7	97	5	95	124	151	5	97	190	8.7	2.8
FEB	86.9	3.10	9.2	95	6	94	77	171	11	94	139	7.6	4.3
MAR	199.0	6.42	11.3	247	2	99	488	253	21	92	462	5.8	2.1
APR	123.1	4.10	6.5	155	6	96	183	186	19	90	205	4.4	3.4
MAY	125.7	4.05	6.5	136	8	94	161	131	8	94	155	5.1	3.6
JUNE	93.1	3.11	6.3	91	6	93	79	179	2	99	165	7.3	3.8
JULY	76.7	2.55	3.5	142	7	95	103	164	5	97	122	5.5	5.1
AUG	77.0	2.48	4.6	255	25	90	177	466	4	99	356	17.0	3.6
SEPT	74.1	2.47	4.8	293	8	97	211	331	6	98	241	10.2	3.1
OCT	98.5	3.18	5.4	337	6	98	326	503	12	98	484	13.5	5.1
NOV	118.2	3.94	8.8	117	7	94	130	175	12	93	193	5.7	3.2
DEC	101.8	3.28	7.3	210	9	96	205	264	9	97	260	9.0	4.4
TOTAL	1304.6	-	-	-	-	-	2564	-	-	-	2972	-	-
AVG.		3.60	MAXIMUM 11.3	168	8	95	214	244	10	96	248	8.4	3.6
No. of Samples	-	-	-	45	42	-	-	79	54	-	-	26	25

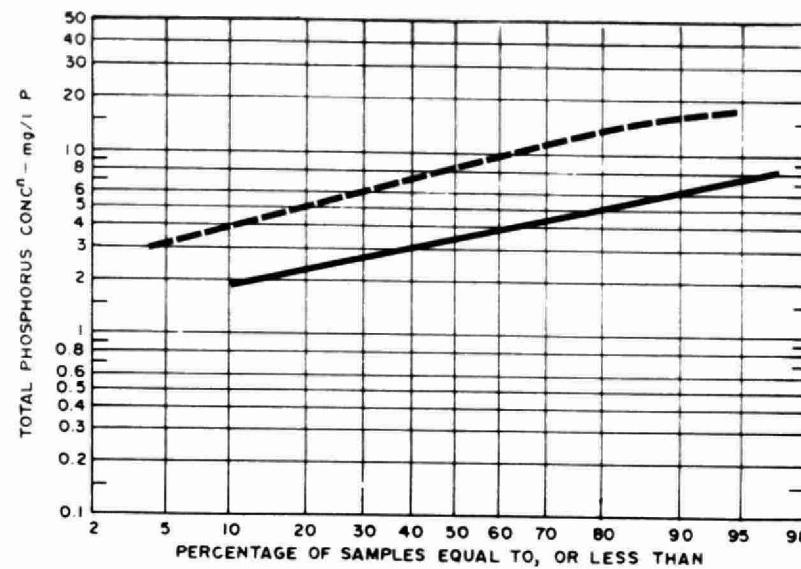
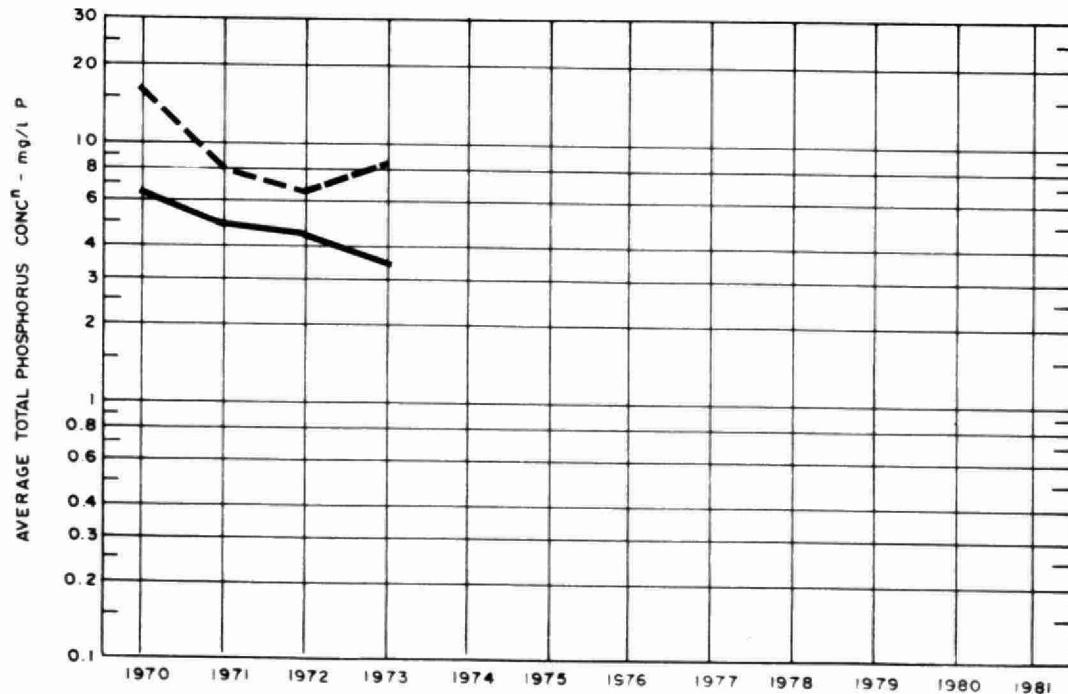
BIOCHEMICAL OXYGEN DEMAND



SUSPENDED SOLIDS



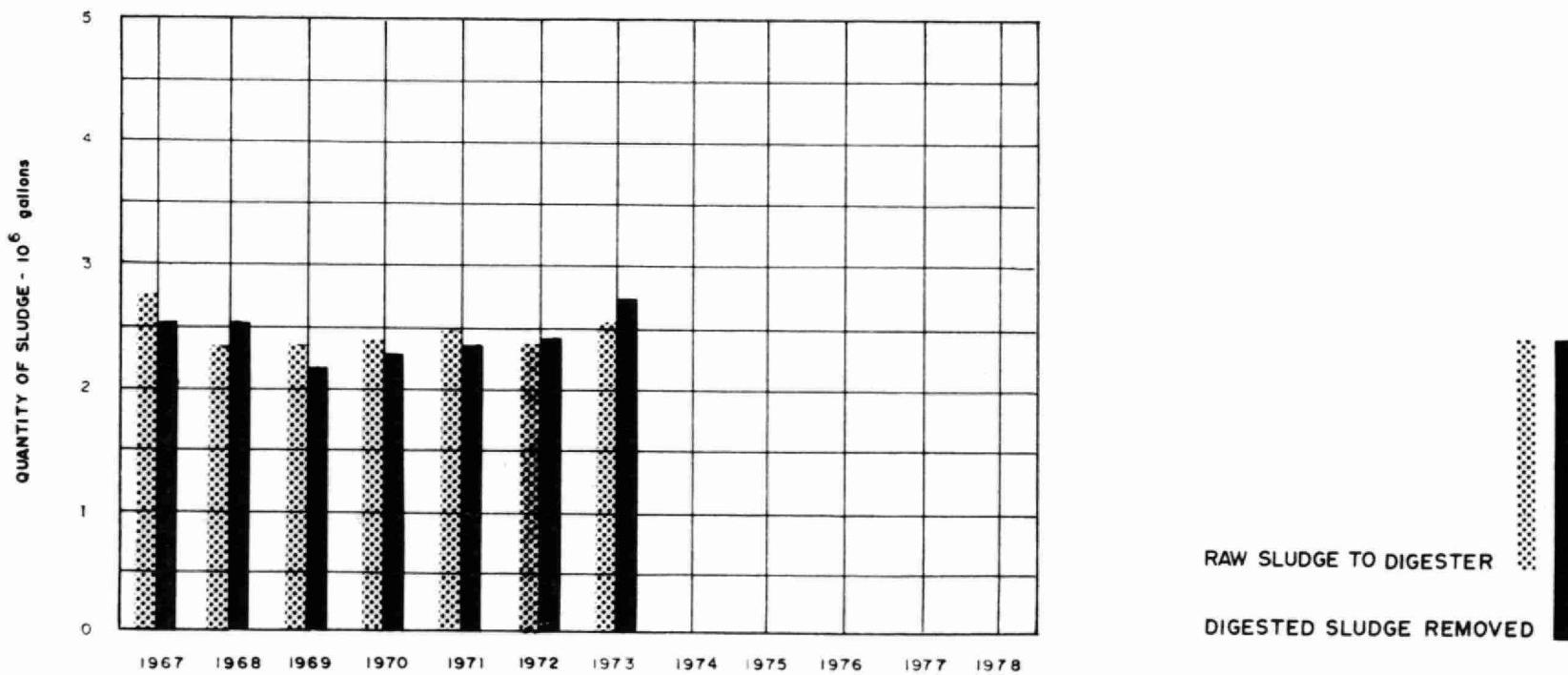
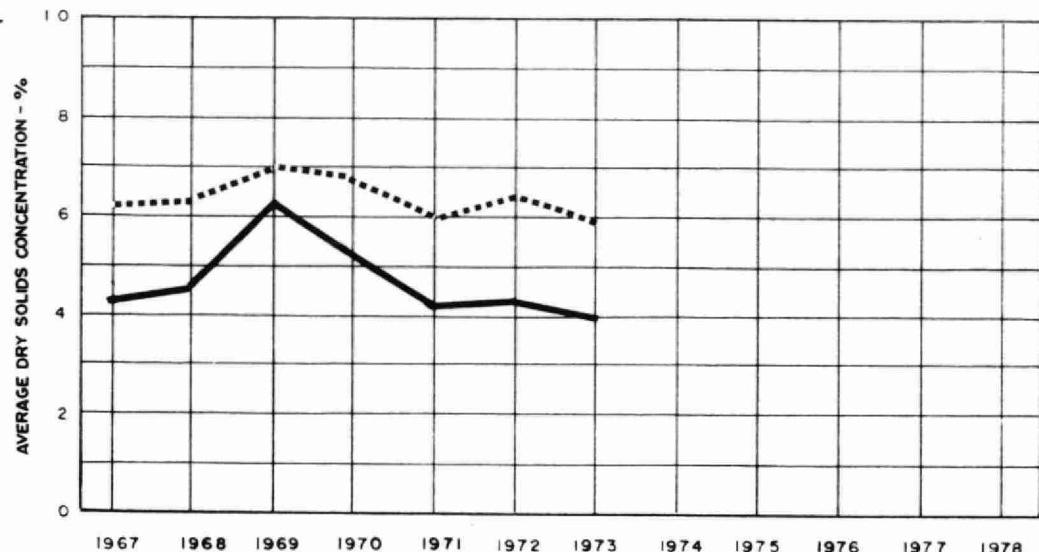
PHOSPHORUS



PLANT INFLUENT ——————
PLANT EFFLUENT ——————

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE —



TREATMENT DATA

MONTH	GRIT QUANTITY REMOVED cubic feet	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
		Cl ₂ USED 10^3 pounds	Avg. DOSE mg/l	BOD	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day ⁻¹	AIR 1000 ft^3 lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T.S. %	AMOUNT HAULED cubic yards
JAN	41	4.2	3.2	84	50	1940	0.19	1.0	184	5.6	69	236	3.7	54		1399
FEB	32	2.4	2.8	49	63	2190	0.07	2.4	187	5.5	71	251	3.8	57		1490
MAR	186	3.1	1.6	44	80	2130	0.14	1.1	212	6.6	68	101	3.8	59		602
APR	8	2.3	1.9	57	60	2210	0.11	1.5	177	6.1	60	209	4.3	55		1242
MAY	29	2.7	2.1	58	85	2240	0.11	1.5	199	5.9	65	222	4.4	50		1316
JUNE	39	2.2	2.4	49	68	2160	0.07	2.2	208	5.4	60	286	4.4	60		1697
JULY	18	2.3	3.0	84	76	2160	0.11	1.6	217	6.1	62	230	4.2	53		1368
AUG	72	2.4	3.2	82	80	2180	0.10	2.4	312	6.1	56	354	4.3	50		2100
SEPT	33	1.8	2.5	93	62	2070	0.12	1.7	212	6.2	63	286	4.1	59		1697
OCT	27	1.9	1.9	91	81	2010	0.15	1.3	198	5.2	66	145	4.0	55		859
NOV	75	2.3	1.9	75	106	2100	0.15	1.4	218	5.5	68	154	3.5	58		912
DEC	17	3.0	2.9	82	86	2170	0.13	1.6	223	5.1	64	236	3.1	54		1403
TOTAL	577	30.6	-	-	-	-	-	-	2547	-	-	2710	-	-	-	16085
AVG.	0.4 cu.ft/mil gal	2.5	2.3	70	75	2130	0.12	1.6	212	5.8	64	226	4.0	55		1340

LABORATORY LIBRARY



96936000119534

LAB